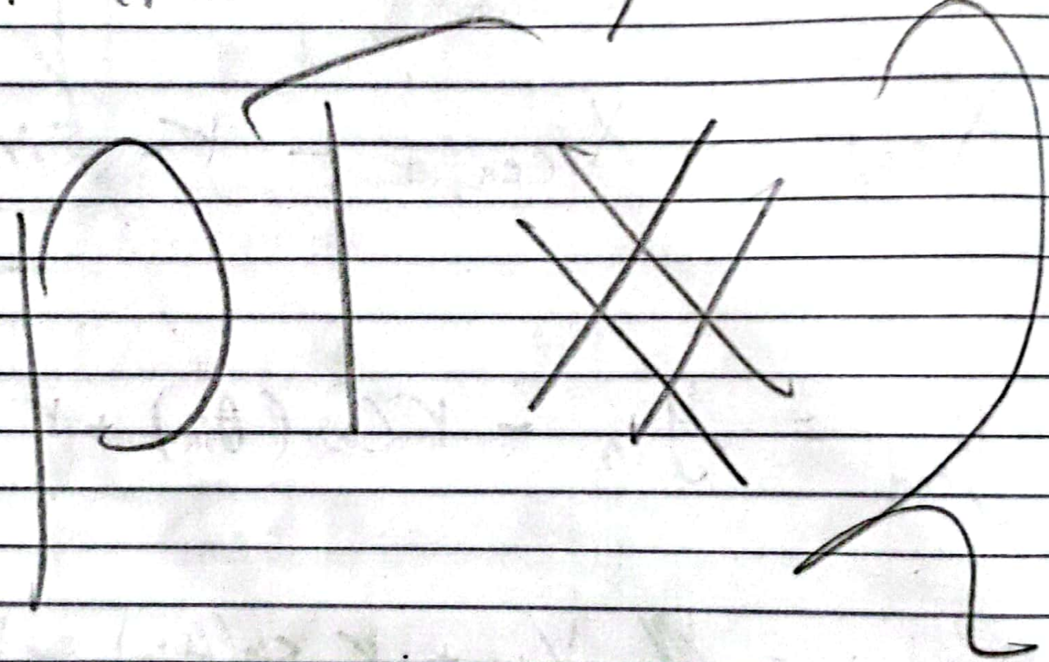
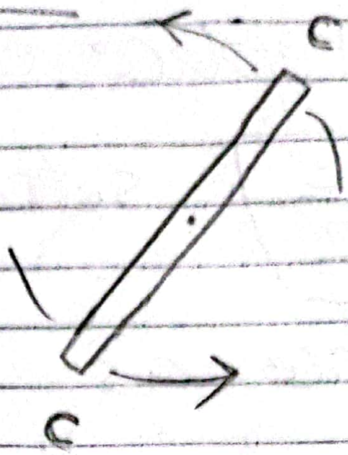
Date : .... Page : ....

Mine Sweeper



Main Case

Cases

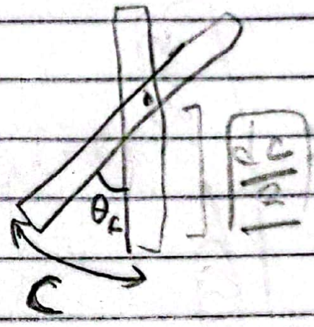


$$r = \frac{d_c}{\frac{c_2}{c_1} - 1}$$

$$r = \frac{d_c}{-2}$$

$$r = -\frac{d_c}{2} \quad \text{(True)}$$

$$\boxed{\theta_f = \frac{2C}{d_c}}$$



True !

$$\frac{d_c}{2}\,\theta_f = C$$

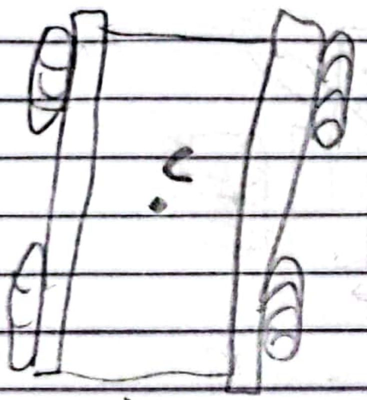
$$\boxed{\theta_f = \frac{2C}{d_c}}$$

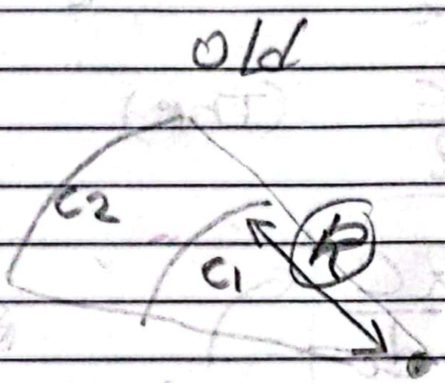
Done to adapt more? more simple ??

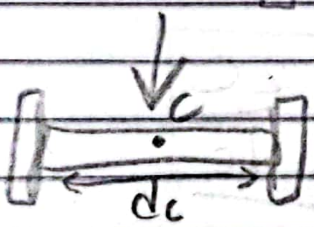
Date : .... Page : ....

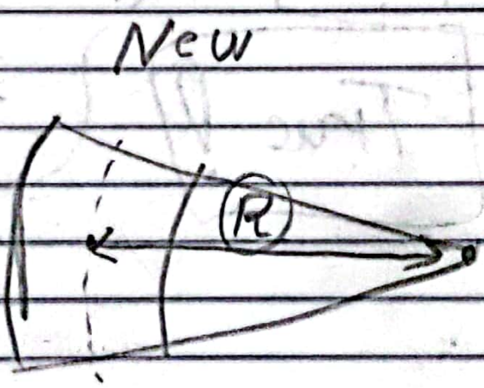
Adaptation :

we replace every r with $\boxed{r - \frac{d_c}{2}}$ setting the new refrence as robot center.









$$R_{New} = R_{old} + \frac{d_c}{2}$$

or $$R_{old} = R_{New} - \frac{d_c}{2}$$

Date : .... Page : ....

Old	New
$r_0 = \dfrac{d_c}{\frac{c_2}{c_1} - 1}$	$r_n - \dfrac{d_c}{2} = \dfrac{d_c}{\frac{c_2}{c_1} - 1}$
	$r_n = d_c \left(\dfrac{1}{\frac{c_2}{c_1} - 1} + \dfrac{1}{2} \right)$
$\theta_f = \dfrac{c_2 - c_1}{d_c}$	$\theta_f = \dfrac{c_2 - c_1}{d_c}$

All the other is the SAme but replacing

$$r_0 + \frac{d_c}{2} \longrightarrow r_n$$

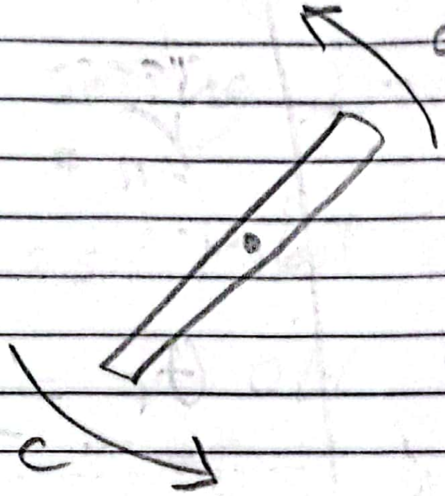
$$X_{robot} = X_{in} + r_n \cos(\theta)$$

$$y_{robot} = y_{in} + r_n \sin(\theta)$$

same result but better approach?

~~Straight~~

Case



Now

$r = 0$

$\theta_F = \frac{2c}{d_c}$

right?

yes

only the angle is altered

postion is the same

$\Delta X = 0$, $\Delta Y = 0$

$\Delta\theta = \frac{2c}{dc}$

Straight Line Config.

only apply when $C_1 = C_2$, not $C_1 \simeq C_2$, I think this is better.

alternate function.

$$\Delta\theta = 0,$$

$$X_{robot} = X_{in} + C \cos(\theta_{robot})$$

$$y_{robot} = y_{in} + C \sin(\theta_{robot})$$

c in replace r ????

Lim?

HOY

relative center issue

Date : .... Page : ....

After

Some

AFTER CENTER Corection

$$R_{ground} = dc\left(\frac{1}{\frac{c_2}{c_1}-1} + \frac{1}{2}\right)$$

$$\Delta\theta_{ground} = \left(\frac{c_2 - c_1}{dc}\right)$$

$$C = \partial \times r_{wheel} \times \frac{n}{N} \times 2\pi$$

→ ∂ is direction

\+ For ↻

− For ↺

or vice versa (to be determined)

θ_{in}, X_{in}, Y_{in} is intialized and accumulated

$$\theta_{F_1} = \theta_{in_1} - \Delta\theta = \theta_{in_2}$$

$$Y_{F_1} = Y_{in_1} - R\cos(\theta_{in_1}) + R\cos(\theta_{F_1}) = Y_{in_2}$$

$$X_{F_1} = X_{in_1} + R\sin(\theta_{in}) - R\sin(\theta_F) = X_{in_2}$$

In Case of straight line Motion $C_1 = C_2 = C$

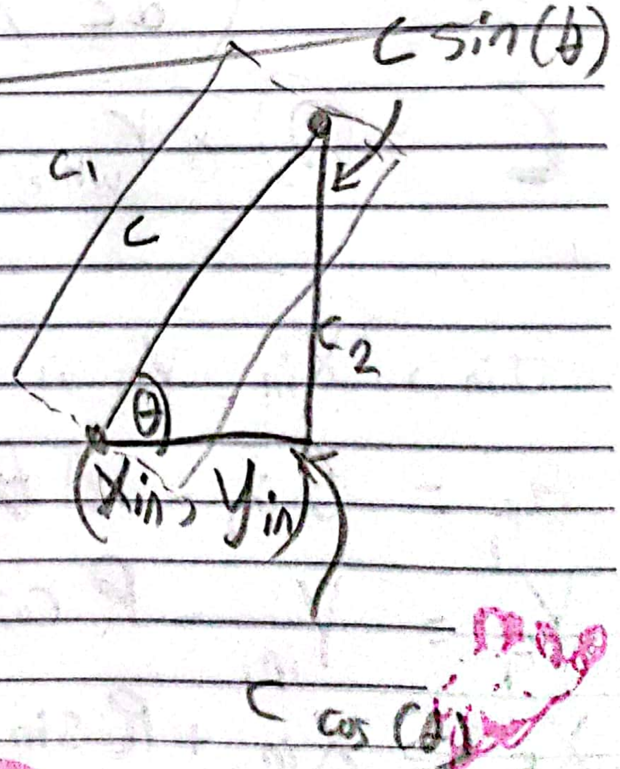
$$\theta_F = \theta_{in} + \Delta\theta = \theta_{in} = \theta$$

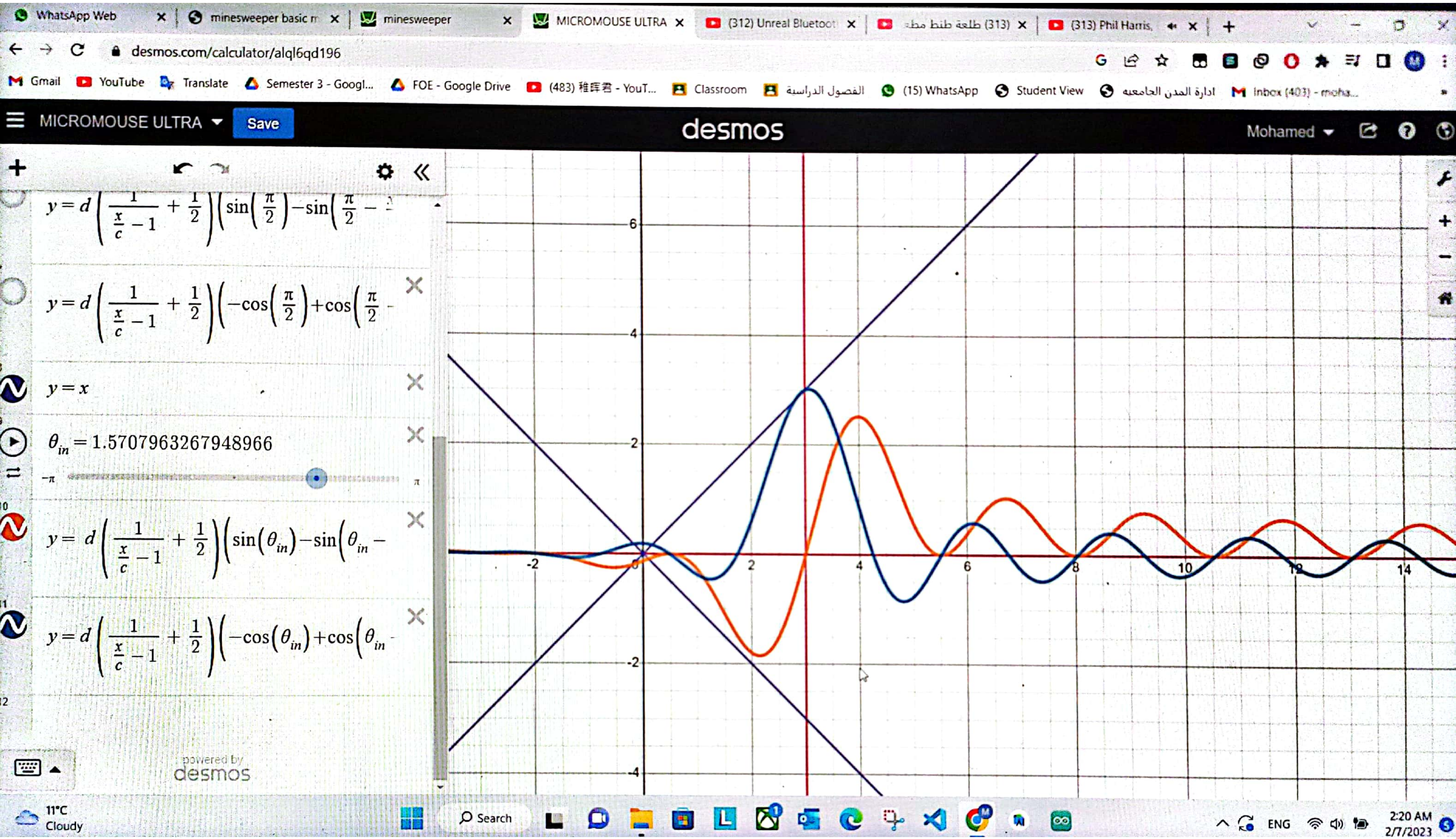
$$Y_F = Y_{in} + C \sin(\theta)$$

$$X_F = X_{in} + C \cos(\theta)$$

2 approachs

$\lim_{C_2 \to C_1}$ From general Equation





desmos.com/calculator/alql6qd196
MICROMOUSE ULTRA
Save
desmos
Mohamed
$y = d\left(\frac{1}{\frac{x}{c}-1}+\frac{1}{2}\right)\left(\sin\left(\frac{\pi}{2}\right)-\sin\left(\frac{\pi}{2}-\right.\right.$
$y = d\left(\frac{1}{\frac{x}{c}-1}+\frac{1}{2}\right)\left(-\cos\left(\frac{\pi}{2}\right)+\cos\left(\frac{\pi}{2}-\right.\right.$
$y = x$
$\theta_{in} = 1.5707963267948966$
$y = d\left(\frac{1}{\frac{x}{c}-1}+\frac{1}{2}\right)\left(\sin(\theta_{in})-\sin(\theta_{in}-\right.$
$y = d\left(\frac{1}{\frac{x}{c}-1}+\frac{1}{2}\right)\left(-\cos(\theta_{in})+\cos(\theta_{in}\right.$
powered by desmos